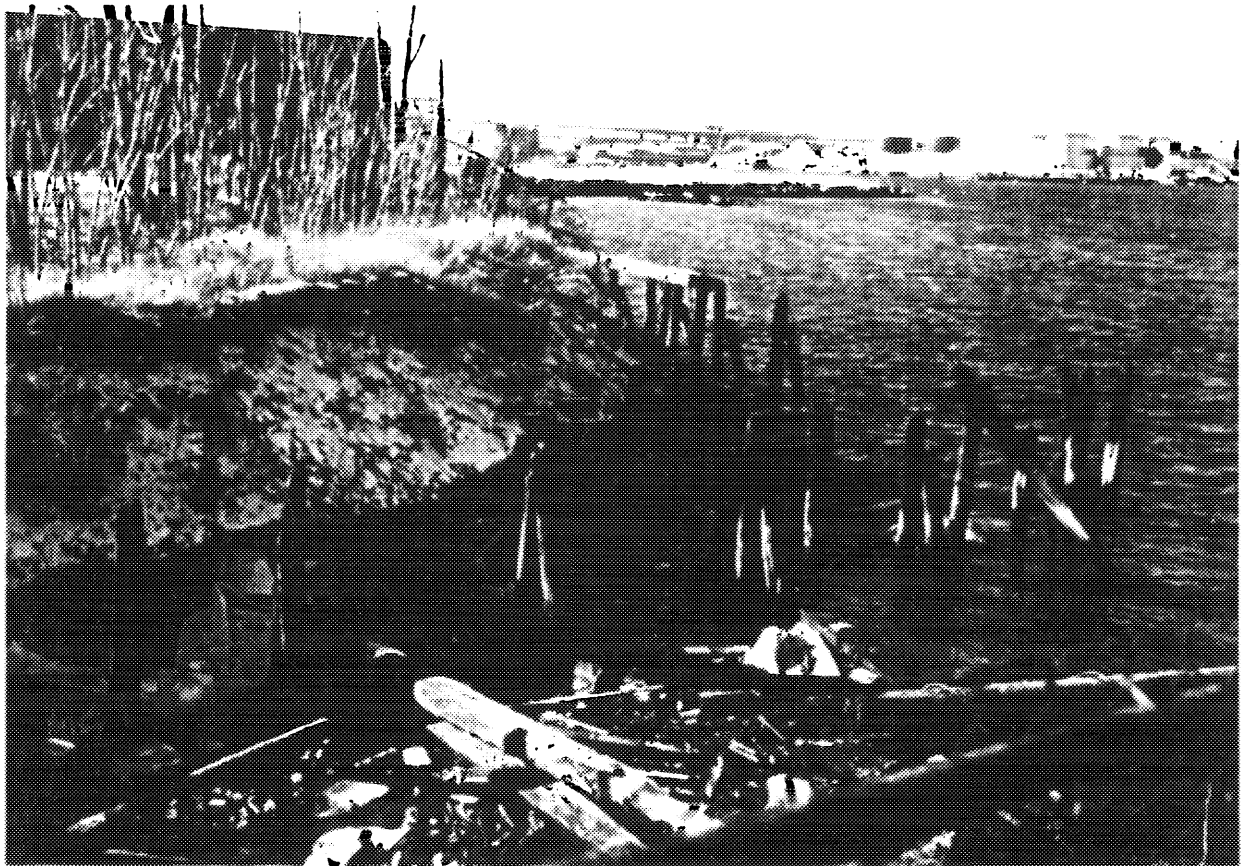


Detailed Project Report  
Chelsea River  
East Boston, Massachusetts

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# Emergency Streambank Protection



November 1989



US Army Corps  
of Engineers  
New England Division

***DETAILED PROJECT REPORT***

**EMERGENCY STREAMBANK PROTECTION**

**CHELSEA RIVER**

**EAST BOSTON, MASSACHUSETTS**

**NEW ENGLAND DIVISION  
CORPS of ENGINEERS  
Waltham, Massachusetts**

**NOVEMBER 1989**

## SYLLABUS

This study is authorized under the special continuing authority contained in Section 14 of the 1946 Flood Control Act, as amended, and investigates a variety of streambank erosion control alternatives in preventing further erosion along the Chelsea River in East Boston, Massachusetts. It was initiated at the request of the Director of Engineering and Construction for the Economic Development and Industrial Corporation (EDIC) of Boston.

Streambank erosion at the project site along the Chelsea River, is a problem resulting from the navigational effects of drawdown associated with the passage of large ships and by wave and tidal erosion action. The streambank erosion has increased the risk that a sewer manhole and sewer main will be undermined and damaged. Historical evidence of erosion along this reach of unprotected riverbank indicates that within the next few years eventual failure of the sewer manhole and main would take place. Significant damage to the sewer main would occur and eventually lead to total failure of this branch of the city's sewerage system. Raw sewerage would be discharged into the tidally influenced river causing additional downstream environmental problems for Boston Harbor.

This study describes the plan formulation process which developed and evaluated possible methods of protecting the sewer main and manhole. Each alternative was assessed in terms of its effectiveness, efficiency, completeness and acceptability to the public. The selected plan is to construct a stone revetment that will provide erosion control along the Chelsea River bank, to prevent further undermining and failure of an existing sewer manhole and sewerline. The estimated first cost of this plan is \$79,600 and the annual cost is \$9,000. Total annual benefits associated with the prevention of the sewer manhole and sewerline failure are estimated at \$11,100. The project is justified with a benefit-cost ratio of 1.2 to 1.

It is recommended that, subject to certain conditions of local cooperation as outlined in this report, the proposed plan be constructed. The estimated share of first cost to the United States and to the local interests are based on cost sharing arrangements described in detail in Section VII of the report. The annual operation and maintenance costs, estimated at \$1,000, are a non-Federal responsibility.

**DETAILED PROJECT REPORT  
CHELSEA RIVER  
EAST BOSTON, MASSACHUSETTS**

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Local Sponsor's Letter of Intent



# **DETAILED PROJECT REPORT CHELSEA RIVER EAST BOSTON, MASSACHUSETTS**

## **I. AUTHORIZATION**

The following investigation has been accomplished under the special continuing authority contained in Section 14 of the 1946 Flood Control Act, as amended, to determine the need and feasibility of constructing emergency streambank protection along the Chelsea River in East Boston, Massachusetts. Federal assistance in preventing further erosion, along a city owned parcel of industrial waterfront property, was requested by the Director of Engineering and Construction for the Economic Development and Industrial Cooperation (EDIC) of Boston in a letter dated January 4, 1989.

Under provisions of the Section 14 authority, Federal construction funding is available for the protection of highways, bridges, public works and public use facilities from streambank and/or shoreline erosion. Such work must be economically justified and advisable in the opinion of the Chief of Engineers.

## **II. DESCRIPTION OF AREA**

The city of Boston is located in Suffolk County, in eastern Massachusetts. The city of Boston is the capitol of Massachusetts and is bordered to the north by the cities of Chelsea and Cambridge, to the south by the city of Quincy, to the west by the town of Brookline, and to the east by Massachusetts Bay.

The Port of Boston, Massachusetts, as shown in Plate 1, is located on the western side of Massachusetts Bay, approximately 50 nautical miles northwest of the tip of Cape Cod. The harbor comprises a water area of approximately 47 square miles. The Chelsea River flows, along the northern boundary of Boston, in a southwesterly direction to its confluence with the Mystic River. The rivers make up the inner Boston Harbor. The peninsulas of Boston, East Boston, South Boston and Charlestown all cluster around the inner harbor and were originally separated from the mainland by tidal marshes, which have since been filled.

### **III. PROBLEM DESCRIPTION**

The primary streambank erosion area is located along the Chelsea River in the vicinity of East Eagle and Condor Streets, as shown on Plate 2. The eroded area consists of approximately 120 linear feet (ft.) of riverbank. The top of the riverbank ranges from 8 to 10 ft. above mean high water. The eroded bank has upper slopes, which are typically, one vertical to one horizontal (1:1) and lower slopes which are typically (1:10). The remains of a wood bulkhead are located approximately one-third of the way up the bank. The wood bulkhead once contained fill and protected the riverbank from the erosive forces of the Chelsea River. The wood bulkhead has since deteriorated to a point where it no longer provides erosion protection nor contains the fill.

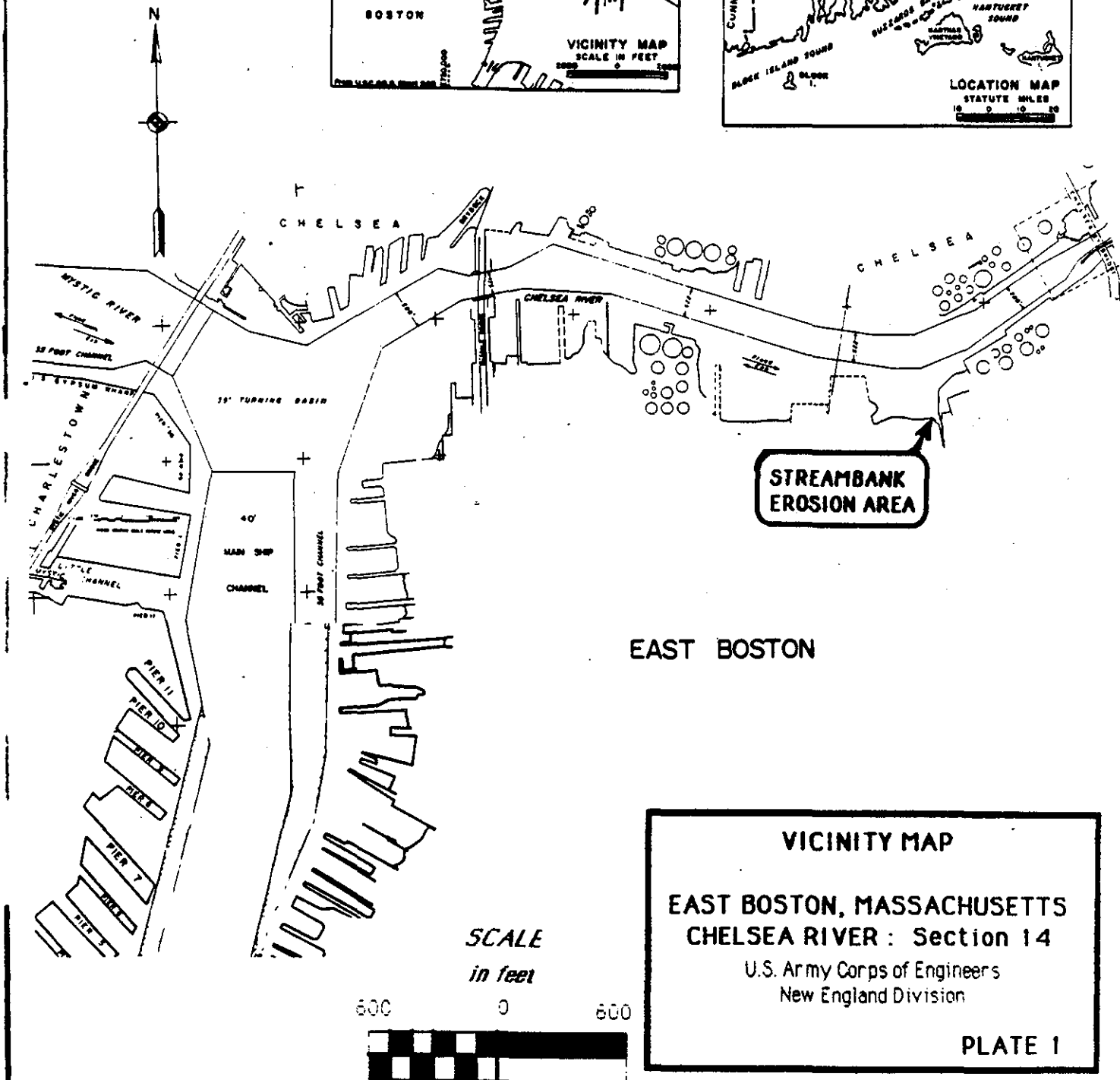
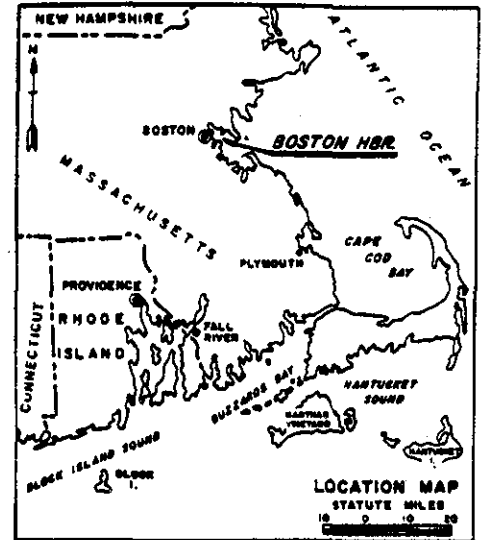
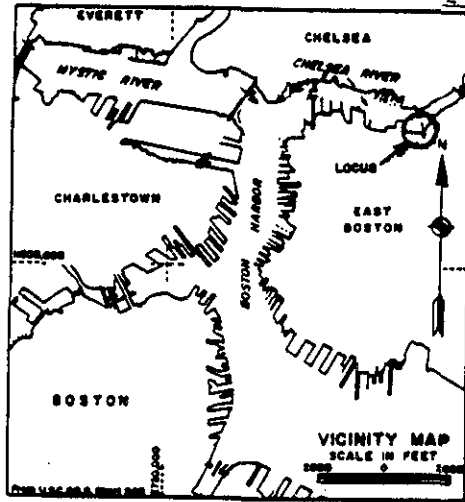
The city of Boston's riverfront property at the project site was once owned and used by the Massachusetts Bay Transit Authority, MBTA (formerly the Massachusetts Transit Authority, MTA). The city is currently constructing a light manufacturing industrial building at the site. Once completed the foundation of the building would be approximately 20 ft. away from the top of the riverbank. Along the east side of the property there is a sewer manhole situated at the mouth of a drainage ditch. Erosion at the project site is a result of the navigational effects of drawdown associated with the passage of large ships and wave and tidal action which have caused the sewer manhole to be in danger of being undermined and damaged. At this time the 15-inch (in.) diameter sewer main, which runs along the riverbank to the manhole is embedded about 10 ft. below the mean high water line.

### **IV. HYDROLOGIC & HYDRAULIC ASSESSMENT**

The Chelsea River, originates at Mill Creek, in the city of Chelsea, and flows in an easterly direction approximately 1- 1/4 miles, to its confluence with the Mystic River. The Chelsea River then flows in a southwesterly direction, approximately 2 -1/4 miles, to its confluence with the Mystic River. The Chelsea River is tidally influenced.

The average tidal range in Boston Harbor is 9.5 ft. with a mean spring tidal range of 11.00 ft. Average river velocities for the inner harbor are less than 0.5 knots (0.84 feet per second, fps). Flooding along the coastline of East Boston is greatly influenced by storm surge elevations of Boston Harbor that result from severe northeast storms. The February 1978 storm was the storm of record, though no serious flood damage was reported in East Boston and the city of Chelsea. Only nuisance flooding was reported in the Chelsea River upstream tributary, Mill Creek, due to poor drainage.

A hydrologic analysis was carried out to establish peak elevation-frequency relationships for floods of the selected recurrence intervals for the Chelsea River affecting East Boston. A summary of peak elevation-frequency relationships for the Chelsea River is shown in Table 1, "Summary Elevations".



**CHELSEA**

**RIVER**



Mean Low Water

Top of  
Riverbank

Sewer Manhole

Riverbank Erosion  
Site

Condor

15 in. Sewer Main

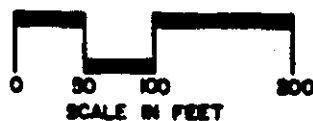
Sewer Manhole Exposed

Street

East

Eagle

Street



SCALE IN FEET

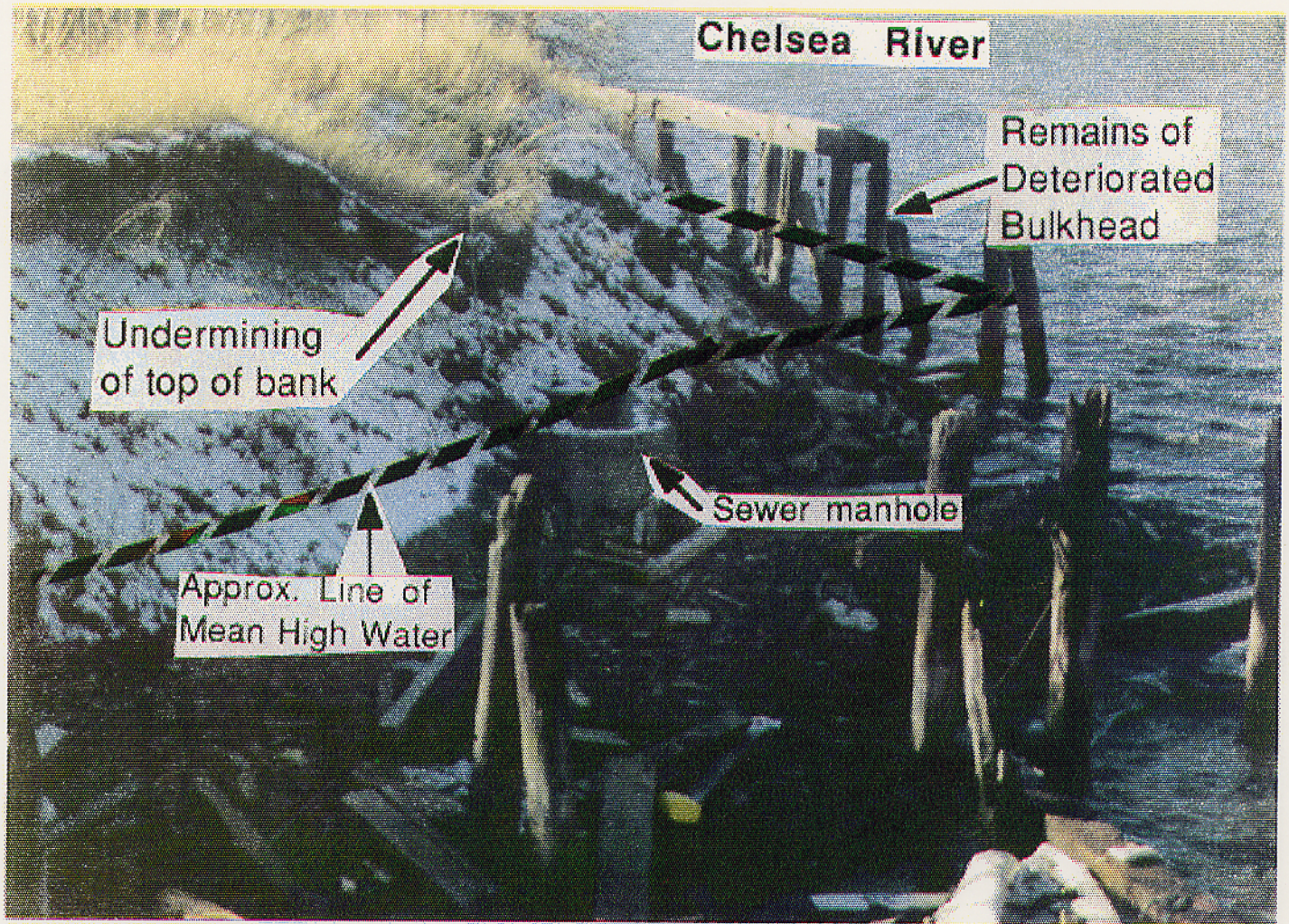
**SITE PLAN**

**EAST BOSTON, MASSACHUSETTS  
CHELSEA RIVER : SECTION 14**

U.S. Army Corps of Engineers  
New England Division

**PLATE 2**





Photograph, looking downstream at the eroding riverbank along the Chelsea River



**TABLE 1**

**SUMMARY ELEVATIONS**  
**Chelsea River - East Boston, Massachusetts**

	<i>Elevation ft.</i>			
	National Geodetic Vertical Datum, NGVD			
	<i>10 yr.</i>	<i>50 yr.</i>	<i>100 yr.</i>	<i>500 yr.</i>
Chelsea River from Boston Harbor to Eastern Ave.	9.1	10.1	10.4	11.3
Chelsea River from Eastern Ave. to the City of Revere Corp. limits	9.3	10.2	10.6	11.4

Two high-water marks, from the 1978 storm of record, were obtained from the United States Geological Survey (U.S.G.S.). The elevation on the Chelsea River at the M.D.C. Sewerage Division Maintenance Yard is 10.3 ft. NGVD and the elevation on Mill Creek upstream of Broadway Avenue is 9.6 ft. NGVD.

## **V. PLAN FORMULATION**

*A. Without Project Condition :* If no action is taken to protect the riverbank in the area, continued erosion will cause the failure of the manhole and subjecting the sewer main to severe intrusion and disruption. Significant damage to the sewer main would follow and eventually lead to total failure of this branch of the city sewer. Raw sewerage would be then discharged into the tidally influenced river causing additional downstream environmental problems for Boston Harbor. Therefore, "No Action" would not be an acceptable solution.

This investigation is consistent with Boston's Harborwalk Development Project, which has been ongoing since 1984. The Harborwalk Development Plan was developed to ensure that new developments along the harbor are managed in a way that protects the city's unique waterfront resources while ensuring that all residents have access to benefits created by waterfront revitalization. The Harborwalk program will create almost a 43-mile continuous waterfront walkway that will stretch from the Neponset River to Charlestown and East Boston.

The shoreline along Condor Street in East Boston is an important link in the city's overall Harborwalk Project. Any construction work along this reach must be designed to be consistent with other features of the Project.

**B. Relocate the Sewer Main :** Existing city development and local terrain do not lend themselves economically to the relocation of the 15 in. sewer main. The sewer main presently traverses the side of the foundation of the industrial building and cannot be moved further away from the river. It would be necessary to relocate the sewer main around the building's foundation and connect to the sewer main located on East Eagle Street. The expense (\$125,000 as estimated by the city of Boston Sewer and Water Department) and its contingent disruption involved in the sewer mains relocation make this alternative cost prohibitive.

**C. Construct Streambank Protection :** During this Reconnaissance study, alternative designs to alleviate erosion were investigated. Five alternatives were developed and evaluated, as shown on Table 2. The feasibility and advisability of each alternative were evaluated.

Several possible methods of protecting the sewer main and manhole were investigated. A timber crib wall, a precast modular retaining wall, a grid block revetment and stone revetment were all potential structural solutions considered for stabilization of the riverbank. Although all of the alternatives investigated could provide protection to the riverbank and sewer manhole, stone slope revetment was found to be the most economical. While preventing erosion along the riverbank, the stone slope revetment would assure recreational access along the top of bank in conjunction with the city's Harborwalk program. The total project first cost of this solution is determined to be \$79,600 and is the Selected Plan for this erosion area. The costs for each plan are as follows.

**TABLE 2**  
**EROSION PROTECTION ALTERNATIVES**  
Chelsea River - East Boston, Massachusetts

<i>Alternatives</i>	<i>Total Project 1st Cost</i>
1. Rubber Tire Wall	\$123,000
2. Timber Crib Wall	\$224,000
3. Precast Modular Retaining Wall	\$266,000
4. Grid Block Revetment	\$132,000
5. Stone Slope Revetment	\$79,600

## **VI. THE SELECTED PLAN**

Studies indicate that the proposed placement of stone slope revetment along the riverbank area is the most cost effective and viable erosion control method to prevent future streambank erosion at the proposed site.

The selected plan calls for a stone revetment consisting of clearing and grubbing any vegetation prior to the placement of granular fill and gravel bedding, 1 foot thick. Then the placement of 2 ft. of stone armor protection on a 1:2 slope. The revetment would be approximately 120 ft. in length beginning at a point 60 ft. downstream of the manhole, then tapering in and wrapping around the manhole, and terminating to high ground along the side of the drainage ditch, shown on Plate 3.

Stone protection was designed based on consultation with the Waterways Experiment Station (WES) and the review of their report on model studies for the Sacramento River Deep Water Ship channel (Technical Report HL-84-3), which experiences similar navigation traffic. Side slopes of 1:2 were determined to be the most practical in matching the existing slope of the riverbank, while providing erosion protection. During a 1 percent, 100-year, chance flood event the proposed protection would not be overtopped and fulfill its intended function of providing streambank protection.

## **VII. ESTIMATES OF FIRST COSTS AND ANNUAL CHARGES**

An estimate of first costs and annual charges for the selected plan along the Chelsea River is reported in Table 3. Since the riverbank and all surrounding lands are owned and managed by the city of Boston, the non-Federal responsibility of providing necessary lands, easements and rights-of-way for project construction is a local issue and will not effect project costs. Estimated unit prices are based on similar work performed in this area. Cost sharing requirements include a 25 percent contribution of project costs by non-Federal interests. With a total project first cost estimated at \$79,600. The non-Federal share of the first cost is currently estimated at \$20,000, subject to change depending on the actual total project costs.

A total annual cost of \$9,000 is computed using a project life of 25 years an interest rate of 8-7/8 percent with and annual operation and maintenance cost estimated at \$1,000. A summary of first costs and annual charges for the selected plan is shown in Table 3.



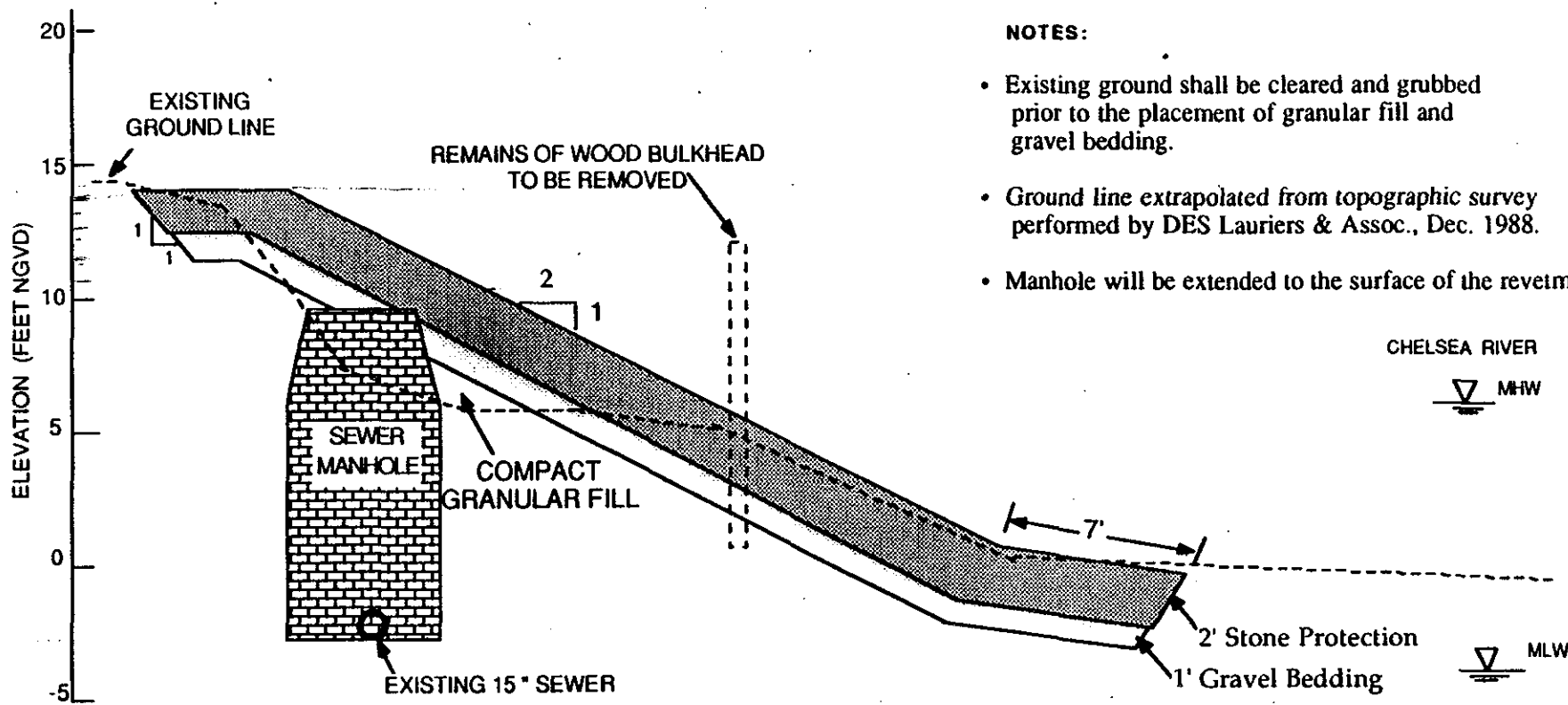
**TABLE 3**

**TOTAL COSTS AND ANNUAL CHARGES  
EMERGENCY STREAMBANK PROTECTION  
Chelsea River - East Boston, Massachusetts  
(January 1989 Price Level)**

ITEM	QUANTITY/UNIT	UNIT PRICE	COST
Site Preparation / Remove Wood Bulkhead	285/L.F.	\$20	\$5,700
Stone Protection (2ft.)	420/C.Y.	45	18,900
Gravel Bedding (1ft.)	220/C.Y.	20	4,400
Excavation	420/C.Y.	9	3,800
Compact Granular Fill	55/C.Y.	20	1,100
Remove & Replace Chain Link Fence	80/L.F.	10	800
Raise Sewer Manhole	1/L.S.	3,000	3,000
<b>Sub Total</b>			<b>\$37,700</b>
Contingencies			<u>8,900</u>
			<b>TOTAL CONSTRUCTION COST</b>
			<b>\$46,600</b>
Engineering & Design			20,000*
Supervision & Administration			<u>13,000</u>
			<b>TOTAL PROJECT FIRST COST</b>
			<b>\$79,600</b>
* Does not include Pre-authorization costs of \$25,000			
<b>NON-FEDERAL COSTS</b>			
Cash; 5% of Total Project Cost			\$4,000
Raise Sewer Man Hole			3,000
Additional Cash Required			<u>\$13,000</u>
			<b>TOTAL NON - FEDERAL COST (25%)</b>
			<b>\$20,000</b>
			<b>TOTAL FEDERAL COST (75%)</b>
			<b>\$59,600</b>
<b>ANNUAL COST</b>			
Streambank Protection Project Amortization (25 - Year @ Federal Interest Rate of 8 7/8%)		\$8,000	
Operation & Maintenance		<u>\$1,000</u>	
		<b>TOTAL ANNUAL COST</b>	<b>\$9,000</b>

**VIII. ESTIMATES OF BENEFITS AND BENEFIT-COST RATIO**

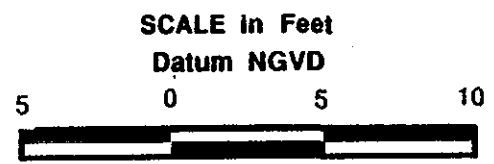
Benefits credited to project construction are based on comparison of the "with" and "without" project condition. Should the embankment be left as is, erosion will continue, leading to undermining and failure of the sewer manhole and main. A benefit evaluation has been prepared for sewer manhole repair cost avoided. Benefits as derived for the "without" project are those recurring costs for temporary embankment repair, sewer manhole repair and temporary disruption of sewer service which would be avoided by preventing eventual sewer main damage with the construction of permanent erosion protection. Temporary repairs and associated costs were estimated to be \$30,500, as shown in Table 4. Estimated benefits consist of temporary repair to stabilize the eroded bank with dumped angular rock protection, as well as repair of the sewer manhole to a usable condition.



**NOTES:**

- Existing ground shall be cleared and grubbed prior to the placement of granular fill and gravel bedding.
- Ground line extrapolated from topographic survey performed by DES Lauriers & Assoc., Dec. 1988.
- Manhole will be extended to the surface of the revetment

**TYPICAL STONE REVETMENT SECTION**



**STONE REVETMENT SECTION**

**EAST BOSTON, MASSACHUSETTS**

**CHELSEA RIVER : SECTION 14**

U.S. Army Corps of Engineers  
New England Division

**PLATE 3**

**TABLE 4**

**DERIVATION OF BENEFITS**  
**Chelsea River - East Boston, Massachusetts**

<b>Estimated Temporary Item (preventable costs)</b>	<b>Repair Costs</b>
1. Temporary Embankment Repair	\$14,500
2. Sewer Manhole Repair	5,500
3. Temporary Disruption of Sewer Service	4,500
4. Emergency Crew Cost	<u>6,000</u>
<b>Total Preventable Damages</b>	<b>\$30,500</b>

The emergency level repairs as accomplished by the city on the riverbank is expected to last 3 years before erosive action of the Chelsea River undermines the protection and further erodes unprotected banks, requiring more extensive emergency repairs. Under these circumstances and during the 25-year life of the recommended plan, erosion repair would have to be accomplished 8 times under a without project condition.

Repair work to the riverbank and sewer manhole represents emergency type construction and would only be a temporary fix. Construction repair is done on an emergency need basis and where a direct threat to the sewer manhole or 15-in. sewer main exists. Temporary repair does not provide a permanent solution to the erosion problem. Amortized over a 25-year life at the current Federal interest rate of 8 7/8 percent, total annual benefits resulting from construction of an erosion control project, equated to the cost of avoiding recurring damages associated with the without project condition, are estimate at \$11,100.

Table 5 compares alternative streambank protection projects annual cost. For determination of the plan that maximizes net National Economic Development benefits (the NED plan), and compliments the city of Boston's riverfront development plan. Plan 5 represents the NED plan.

**TABLE 5**

**ANNUAL COSTS & ANNUAL BENEFITS**  
**COMPARISONS BETWEEN SELECTED PLAN & ALTERNATIVES**  
**Chelsea River - East Boston, Massachusetts**

<b>Plan</b>	<b>Annual Cost</b>	<b>Annual Benefits</b>	<b>Net Benefits</b>
1. Rubber Tire Wall	\$12,300	\$11,100	-----
2. Timber Crib Wall	\$22,600	\$11,100	-----
3. Double Wall	\$26,800	\$11,100	-----
4. Steel Sheet Pile	\$ 13,300	\$11,100	-----
5. Stone Slope Protection	\$ 9,000	\$11,100	\$2,100

The selected project will provide over a 100-year level of flood protection to the exposed riverbank. The annual cost of the stone slope protection plan is \$9,000 compared with the annual benefits of \$11,100. The ratio of benefits-to-costs is 1.2 to 1 with net benefits equal to \$2,100. The stone slope protection plan would eliminate future disruption in sewerage service and reduce potential pollution of the river and harbor. The city of Boston would be responsible for maintenance of the project, estimated to cost \$1,000 annually.

## **IX. ENVIRONMENTAL CONSIDERATIONS**

No significant environmental effects are expected to occur during or after construction of the erosion protection project. Construction activities will probably cause increased turbidity in the Chelsea River for a short period, but should have no permanent effect on water quality. Completed coordination with relevant state and Federal agencies indicated no significant effect on fish and wildlife habitat is expected due to project construction. For a more detailed discussion of the environmental effects of the recommended project, see the attached 'Environmental Assessment'.

## **X. REQUIREMENTS OF LOCAL COOPERATION**

The city of Boston is the non-Federal sponsor for the proposed project. The Director of EDIC for the city, by virtue of a letter dated (see Enclosure I) supports the concept of protection of the sewer manhole and main, and have indicated their willingness and ability to provide items of local cooperation including cost sharing.

A draft Local Cooperation Agreement (LCA) has been reviewed by the local sponsor and is understood. Satisfactory written assurances of local cooperation will be obtained by the Federal Government prior to requesting funds for construction of an approved project. Such assurances do not commit the Federal Government to construction of the project.

## **XI. CONCLUSIONS**


It is concluded that construction of stone slope protection will provide erosion control along the Chelsea River streambank to prevent undermining and failure of an existing sewer manhole and sewer line. The plan selected provides a technically sound solution to the problem and is acceptable to local interests.

## XII. RECOMMENDATIONS

I recommend that this report be approved as a basis for the preparation of plans and specifications and construction of this project under authority contained in Section 14 of the 1946 Flood Control Act. I further request that the New England Division Engineer be designated the approval authority for the construction plans and specifications.

Recommendations contained herein reflect the information available at this time and current Departmental policies governing formulation of individual projects. They do not reflect program and budgeting priorities inherent in the formulation of a national Civil Works construction program nor the perspective of higher review levels within the Executive Branch. Consequently, the recommendations may be modified before they are transmitted for authorization and/or implementation funding. However, prior to transmittal, the sponsor, the state, interested Federal agencies, and other parties will be advised of any modifications and will be afforded an opportunity to comment further.

Date 03 NOVEMBER 1989

  
DANIEL M. WILSON  
Colonel, Corps of  
Engineers  
Division Engineer

### **XIII. ACKNOWLEDGEMENTS**

The New England Division (NED), U.S. Army Corps of Engineers prepared this report under the general direction of Colonel Daniel M. Wilson, Division Engineer. It was prepared by Mr. Robert S. Russo, Project Manager, under the supervision of Mr. F. William Swaine, Chief Project Development Section, and Mr. Joseph L. Ignazio, Chief Planning Division.

Members of the study team include:

Ms. Kate Atwood - Cultural Resource Analysis  
Mr. Kirk Bargerhuff - Environmental Assessment  
Miss Karen Dame - Wetland Analysis  
Ms. Susan Douglas - Public Affairs  
Mr. Terrence Fleming - Environmental Assessment  
Mr. Wayne Johnson - Civil Layouts  
Mr. Richard Ring - Economic & Social Analysis  
Mr. Paul Schimelfenyg - Stone Revetment Design  
Mr. Anthony Siegal - Cost Estimates  
Mr. Jon Szarek - Hydraulic Analysis

This report was prepared for publication by Miss Paula Morin and Mr. Robert Bentham.

Special Thanks are extended to Mr. Lawrence D. Mammoli, Chief of Engineering and Construction for EDIC, Boston and Mr. Paul R. Osborn, Project Engineer for EDIC, Boston whose cooperation and assistance were instrumental in resolving complex issues. They have been a pleasure to work with.

**ENVIRONMENTAL ASSESSMENT**  
**Finding of No Significant Impact**  
**and**  
**Section 404 (b)(1) Evaluation**

**Section 14**  
**Emergency Shoreline Protection**

**CHELSEA RIVER**  
**EAST BOSTON, MASSACHUSETTS**

**prepared by:**

**Terrence S. Fleming**  
**Marine Ecologist**

**Kate Atwood**  
**Archeologist**

**Kirk E. Bargerhuff**  
**Biological Technician**

**September 1989**

**New England Division**  
**U.S. Army Corps of Engineers**  
**Waltham, Massachusetts**

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APPENDIX A: PERTINENT CORRESPONDENCE

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Plate 1

Follows 1

Plate 2

Follows 1

Plate 3

Follows 1

Plate 4

Follows 2

## **I. INTRODUCTION**

### **A. Purpose and Need**

This Environmental Assessment provides an evaluation of the potential environmental impacts of an emergency shoreline protection project. The proposed project calls for the construction of approximately 120 feet of stone revetment along a section of the Chelsea River in East Boston, Massachusetts (see Plate 1 and 2). Presently, severe erosion caused by shipping navigation as well as wave and tidal action has caused a sewer manhole and a 15 inch sewer main line to be in danger of being undermined and damaged.

### **B. Project Authority**

This Environmental Assessment was prepared under the National Environmental Policy Act of 1969, as amended, and other appropriate Federal Environmental Regulations. The project authorization is from the special continuing authority contained in Section 14 of the 1946 Flood Control Act, as amended. Section 14 allows the Corps of Engineers to participate in the planning and construction of economically justified streambank erosion control projects in situations where public facilities are threatened.

## **II. PROJECT DESCRIPTION**

### **A. Selected Plan - Stone revetment**

The selected plan calls for the construction of a stone slope revetment along approximately 120 feet of the Chelsea River. The project will begin approximately 60 feet downstream of the manhole, tapering in and wrapping around the manhole, and eventually terminating alongside the drainage ditch (see Plate 3). The site will be cleared and grubbed of all vegetation prior to construction activities. Gravel bedding and gravel fill, one foot thick, will be placed prior to the placement of stone protection on a one vertical to two foot horizontal slope. The revetment will extend approximately 15 feet into the intertidal area between Mean High Water and Mean Low Water.

### **B. Alternatives**

#### **1. No Action**

If no action is taken, erosion will continue, eventually causing failure to the manhole and subjecting the 15 inch sewer main line to complete failure of a section of East Boston's sewage system. Raw sewage would then be discharged into the tidally influenced Chelsea River causing downstream environmental problems in Boston Harbor and increasing coliform bacteria levels. This action was considered an unacceptable solution.

## 2. Relocate the Sewer Main

City development and local landscape do not economically justify relocation of the sewer main. The sewer main line presently traverses the foundation of an industrial building along Condor and East Eagle Streets. It would be necessary to relocate the sewer main around the building foundation and connect to the main located on East Eagle Street. This alternative was rejected due to lack of economic justification.

## 3. Alternative Protection Methods

Additional structural options were considered for shoreline protection. A timber crib wall, a precast modular wall, and a stone grid block revetment were all potential solutions for shoreline stabilization. These options were rejected due to lack of economic justification and failure to compliment the City of Boston's Harborwalk Development Project.

## III. ENVIRONMENTAL RESOURCES

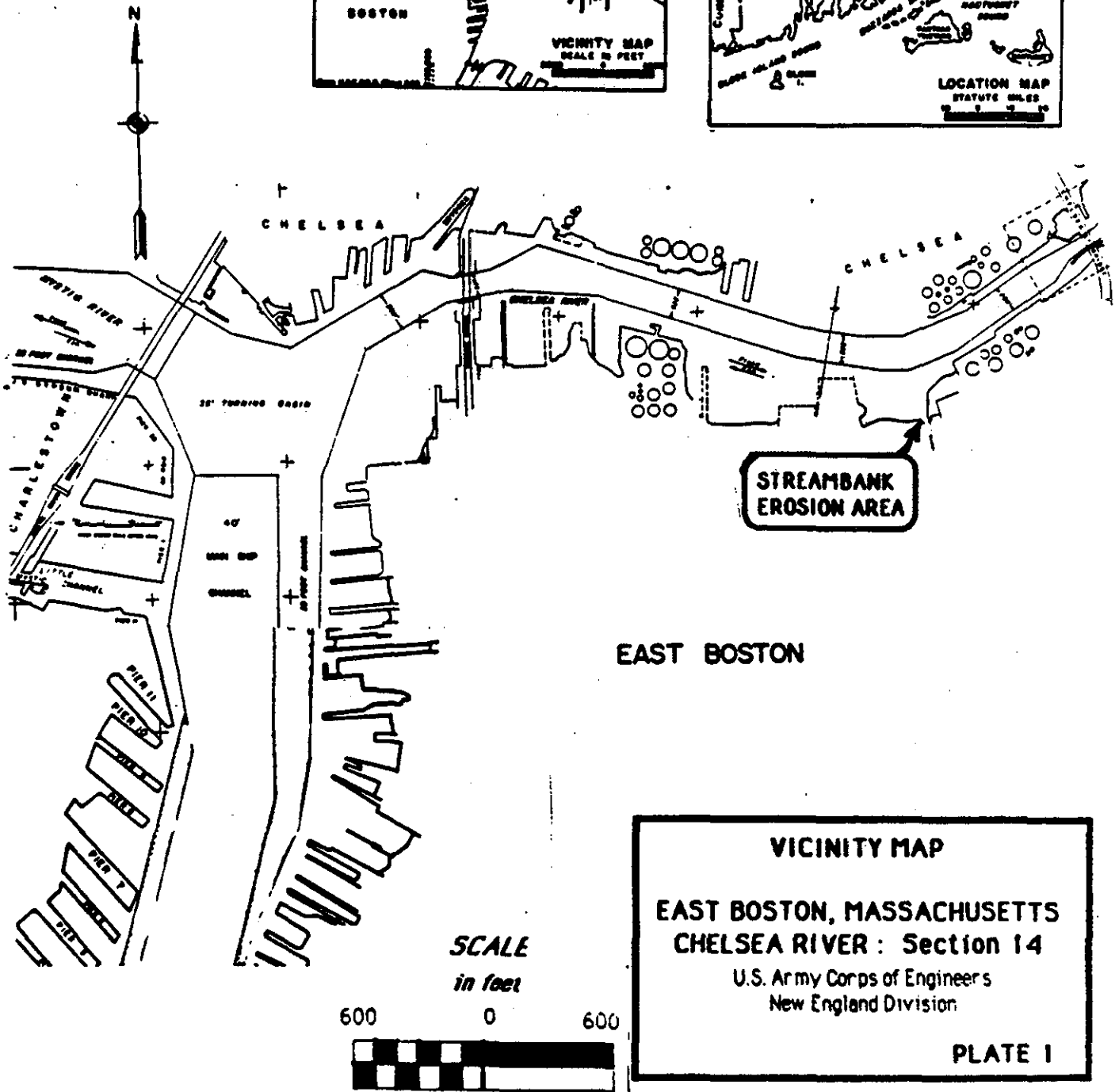
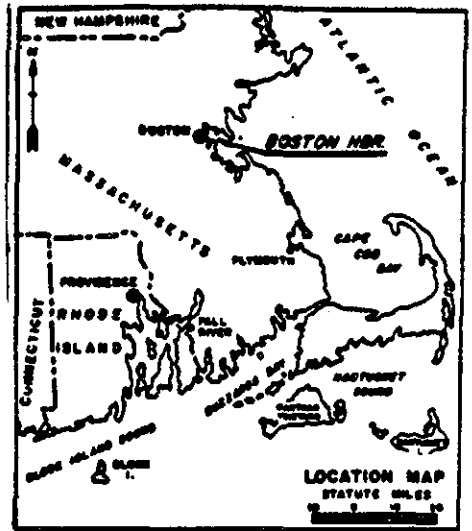
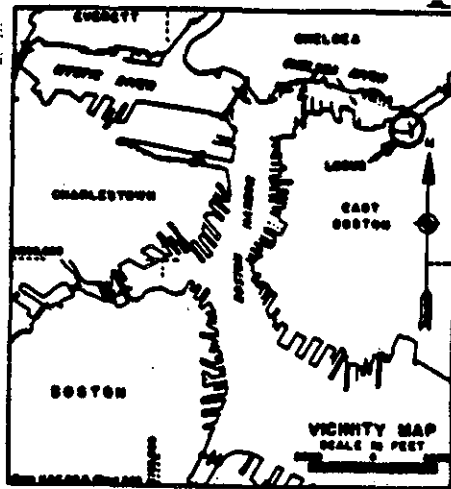
### A. General Setting

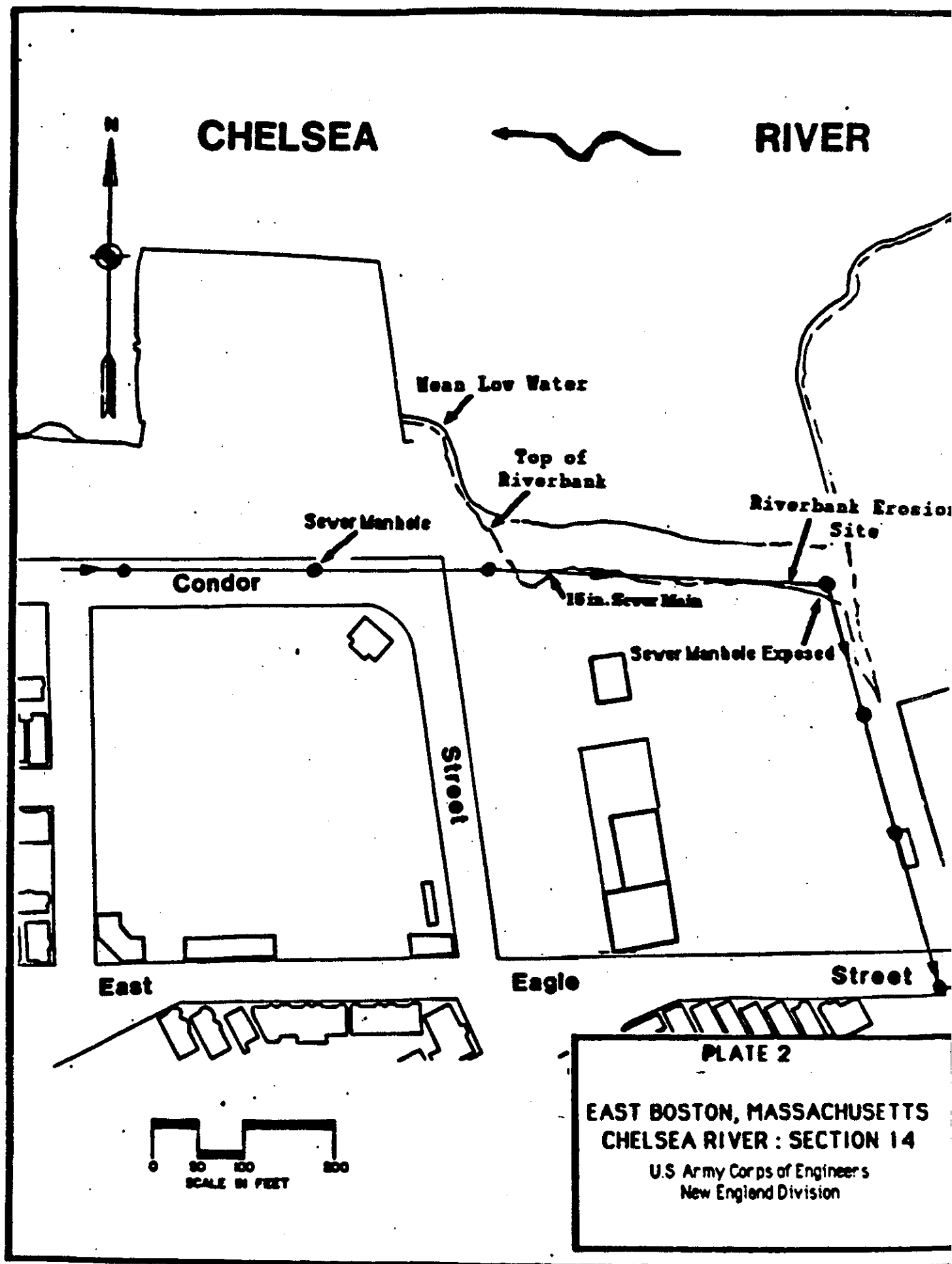
The City of Boston is located in Suffolk County in eastern Massachusetts. It is the capitol of Massachusetts and is bordered to the north by the Cities of Cambridge and Chelsea, to the south by the City of Quincy, to the west by the Town of Brookline, and to the east by the Port of Boston and the Massachusetts Bay. The Chelsea River forms the northern boundary for the City of Boston and flows in a southwesterly direction to its confluence with the Mystic River. These two rivers constitute the inner Boston Harbor. The peninsulas of Boston, East Boston, South Boston, and Charleston all cluster around the inner harbor.

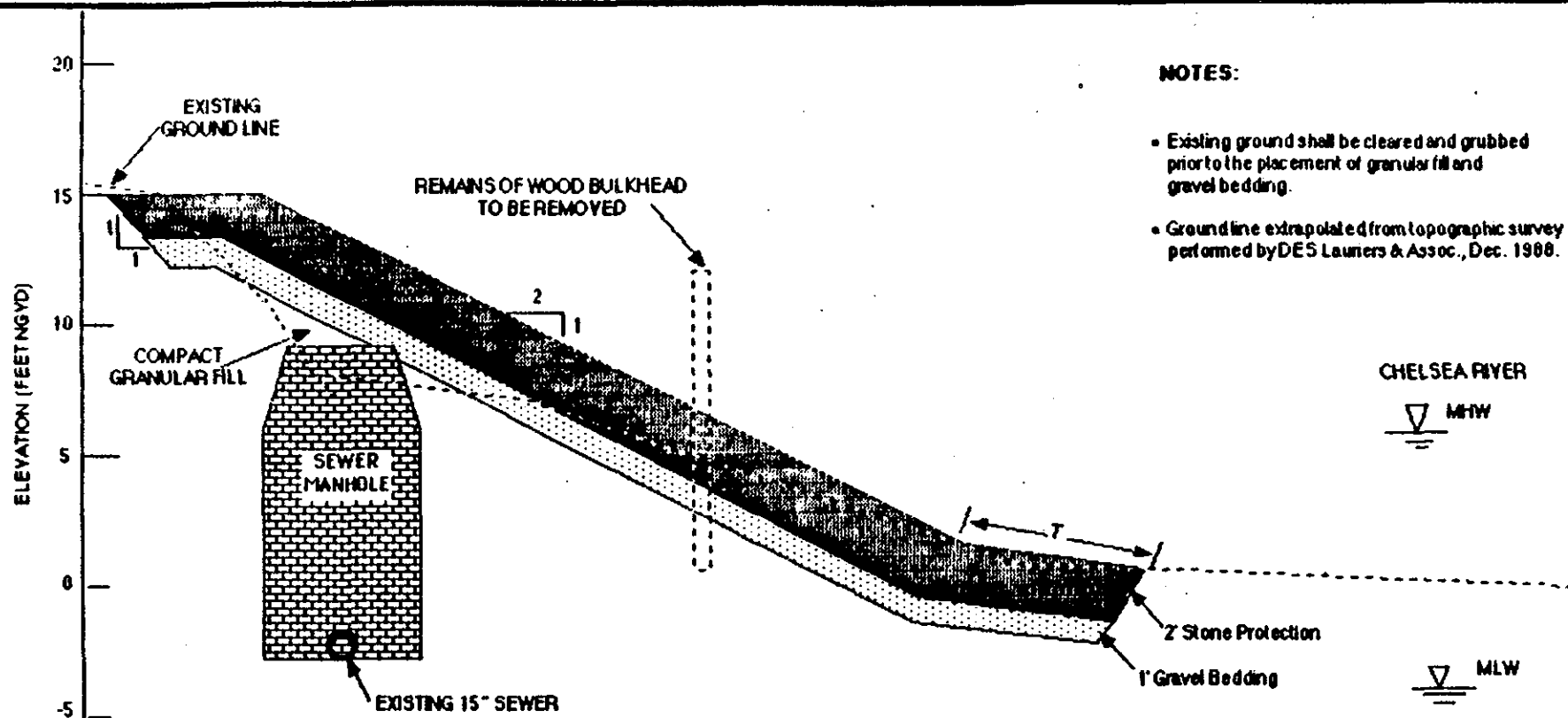
The project area lies in East Boston along the Chelsea River in the vicinity of Condor and East Eagle Streets. The area of shoreline erosion is a small inlet near an industrial building. Presently a light manufacturing building is being constructed on the site and when completed, the foundation will be approximately 20-25 feet from the unstable bank. The area is highly urbanized (see Plate 4).

### B. Aquatic Habitat

Substrate in the high intertidal area near the project site consist primarily of fill material (coarse sand, gravel and cobble littered with debris). This substrate extends approximately 50 to 100 feet seaward of the river bank. The mid to low intertidal is mudflat. The bottom substrate in the subtidal portions of the Chelsea River consist primarily of organic clay and sand (COE, 1988).







**TYPICAL STONE REVETMENT SECTION**

**SCALE in Feet**  
**Datum NGVD**



**STONE REVETMENT SECTION**

**EAST BOSTON, MASSACHUSETTS**  
**CHELSEA RIVER : SECTION 14**

U.S. Army Corps of Engineers  
New England Division

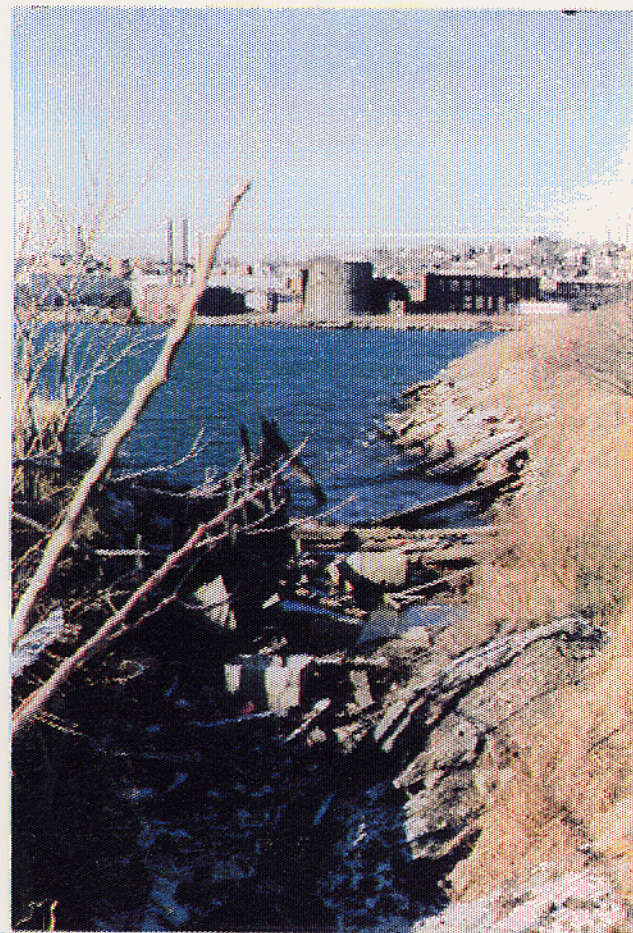




Project Location at high tide.



Litter and debris in project area.



Project location from swell area,  
(Chelsea on opposite bank).

#### PLATE 4

**EAST BOSTON, MASSACHUSETTS  
CHELSEA RIVER : SECTION 14**

U.S. Army Corps of Engineers  
New England Division



### C. Water Quality

Waters of the Chelsea River have been classified by the state of Massachusetts as class "SC". This water classification is suited for aesthetic enjoyment, recreational boating, industrial boating, industrial cooling processes, and habitat for indigenous wildlife and forage for game fish.

A 1988 Navigation Improvement Study and Environmental Assessment by the U.S. Army Corps of Engineers (COE) for Boston Harbor, the Chelsea River, the Mystic River, and Reserved Channel indicated that in general, the water quality of Boston Harbor increases from the inner harbor seaward. The inner harbor is under the influence from freshwater inputs from Chelsea and Mystic Rivers. The report also indicated the maximum current velocity during spring tide in the Chelsea River to be 0.2 knots.

The Chelsea River water column was sampled in 1986 on the ebb tide in July and on the flood tide in November. Dissolved Oxygen levels were 93% saturated in the surface (0.3 m). Salinity was 25.5 0/00 at the surface and 26.5 0/00 on the bottom. July surface temperature was 16.25 degrees Celsius (top) and 15.0 degrees Celsius (bottom). In November, salinity measured 22.0 0/00 at 6.5 degrees Celsius on the surface and 22.0 0/00 at 7.75 degrees Celsius on the bottom (COE 1988).

Pollution to the inner Boston Harbor waterways is the result of the highly industrialized environment surrounding the Chelsea River and the Boston Harbor. The major sources of water pollution include combined sewer overflows, debris and refuse, wastewater treatment discharges, tributary streams, ship and pleasure boat discharges, and storm runoff.

### D. Aquatic Resources

#### 1. Shellfish and Benthic Invertebrates

Subtidal benthic sampling in the Chelsea River was conducted as part of the Corp's Boston Harbor Navigation Improvement Project (COE, 1988). In July 1986, benthic populations in the vicinity of the project area was determined to be 19,181.25 individuals per square meter from 35 species. Eight species comprised 95% of the population. The top five species were polychaetes Polydora ligni, Polydora aggregata, Capitella capitata, Etone flava, and Spio armata. In November 1986, the benthic population samples were determined to be composed of 68.75 individuals per square meter, comprised of only one species, Streblospio benedicti.



Mudflats in the low to mid-intertidal are likely to provide habitat for mud-dwelling polychaete worms, molluscs and amphipods. Large number of mudsnails can be observed grazing on the surface of the flats. The area also supports significant softshell clam population. Polychaete species are likely to be similar to those found in the subtidal community.

Substrate conditions in the high intertidal (mostly fill material) limits the benthic community to a few benthic species (e.g. barnacles, periwinkles and limpets) attached to hard surfaces. This area is not suitable habitat for shellfish or any other soft-bottom benthic organisms.

## 2. Fish

Fish samples taken indicated the presence of four dominant species. These species were rainbow smelt (Osmerus mordax), alewife (Alosa pseudoharengus), menhaden (Brevoortia tyrannus), and green crabs (Carcinus maenas).

Information on spawning species, numbers, and quality of spawning and their significance to regional resources is sketchy. Winter Flounder (Pseudopleuronectes americanus) are known to spawn in the sandy substrate in the Chelsea River, but probably have a low success rate due to the disturbances caused by the propwash from tugboats and petroleum carriers. In addition, since the principle streams and rivers discharging into the inner harbor have dams on them, tidal spawns of smelt and alewife are unlikely (COE, 1988).

## E. Terrestrial Resources.

### 1. Vegetation

The project area lies in the highly urban environment of East Boston. Terrestrial resources have been influenced by the dense development of the Cities of Boston and Chelsea. Commercial development along the waterway has substantially altered the natural environment.

At the project site, the terrestrial vegetation extends from the building site to the edge of the eroding shoreline approximately eight to ten feet. A site visit 14 February 1989 identified species of Chinese sumac (Ailanthus altissima), smooth sumac (Rhus glabra), staghorn sumac (Rhus typhina), red maple (Acer rubra), and grasses. The area contains a high amount of litter and debris (plastics, brick, concrete, wood, discarded shopping carts, and abandoned motorcycles and refrigerators).

## 2. Wildlife

The project area does not induce an environment favorable to the propagation of wildlife species. Wildlife species which are most most likely to exist include house cats (Felis sp.), rats (Rattus sp.), mice (Peromyscus sp.), shrews (Sorex sp.), gulls (Larus sp.), starlings (Sturnus vulgaris), and sparrows (Family Fringillidae).

### F. Threatened\ Endangered Species

No rare, threatened, or endangered species are known to exist in the project area (see letters from Gordon Beckett, U.S. Fish and Wildlife Service, 23 May 1989; and Douglas A. Thompson, Wetlands Protection Section, U.S. Environmental Protection Agency, 13 June 1989.)

### G. Historic and Archeological Resources

#### 1. Prehistoric Resources

There are no known prehistoric archaeological sites in the vicinity of the proposed project area. The area would have been an attractive location for prehistoric exploitation of the natural resources of the revering and marine environment. However, due to the extensive modifications and filling episodes which have occurred in East Boston over the last 300 years, the area has no prehistoric site potential.

#### 2. Historic Resources

East Boston has undergone major changes since settlement began in Boston in the 17th century. What is now known as East Boston was once five separate islands, Noddle's, Apple, Governor's, Bird and Hog Islands which were all eventually joined by landfill operations. East Boston has undergone a variety of uses since 1630: a grazing area for cattle, a major shipbuilding center, and its present use primarily as a residential area and home of Logan airport.

The islands were once heavily forested, but the colonists cleared the land for lumber, then used the cleared land for grazing cattle. Governor's Island was owned by Governor Winthrop and his family from 1632 until 1808 when the island was used by the U.S. government to erect a fort. Noddle's Island was not heavily settled until the late 1800s. The first resident was Samuel Maverick in 1634. He remained on the island until 1650. In 1830 Noddle's Island still only had a population of eight residents and the land was used chiefly for farming.

In 1833 General William Sumner bought Noddle's Island for \$80,000 and founded the East Boston Company. This company owned the island and controlled the development of the community until the first half of the 20th century. The initial goal of the East Boston Company was to develop the area as a vacation resort as well as a trading and manufacturing center. Extensive operations began filling marshes which lay between the four hills on the island. The island was divided into four neighborhoods and houselots were sold.

The East Boston Company also built wharves along the waterfront. A freight terminal of the Eastern Railroad was erected in 1833 and the East Boston Company attracted several shipbuilders, traders and manufacturers to relocate on East Boston's new uncrowded waterfront. By 1835 there were already almost 700 people living on the island. The new manufacturers included a sugar refinery, an iron foundry, a timber company and several lumberyards. There were 10 wharves already in use on the waterfront and ferries were making regular runs between Boston and East Boston.

East Boston became a major shipbuilding center in the mid 19th century. The first ship was launched from an East Boston shipyard in 1839, and the business grew and prospered until the end of the Civil War. The most well known shipyard was owned by Donald McKay whose famous clipper ships set many speed records. The industry flourished until after the Civil War when wooden sailing ships were replaced by steel and steam power. The McKay shipyard closed in 1875.

Between 1845 and 1870 the population of East Boston grew from around 1500 people to almost 20,000 inhabitants. The residences of Jeffries Point and Eagle Hill were owned by wealthy merchants while the new immigrants from Canada and Ireland settled near Maverick Square. When the shipbuilding industry declined, the population began to decrease. This continued until the influx of new immigrants from Italy and Russia began in 1885.

New industry entered East Boston at the turn of the century. The railroad became the center of trade at the docks. Other industries such as shoe factories, foundries, machine shops and garment factories were lured to the area by the ready labor pool of the new immigrants and the railroad docks. The transportation facility which would have the greatest impact on the East Boston community, Logan Airport opened in 1922. The growth of this area has been checked by the expansion of the airport which now controls two-thirds of the land area of East Boston.

The proposed project area has an extensive history of filling activities related to the development of the East Boston waterfront. In a Plan of East Boston from 1858, the proposed project area is adjacent to a filled section of the waterfront which had a gas works situated on a wharf. This area was further filled sometime prior to 1900 when a Corps map of Boston Harbor was published showing additional "wharfing out" at this location. A further incidence of filling occurred sometime prior to 1971 as illustrated on a USGS Topographic map published that year. Therefore, the proposed project area is located entirely on fill material.

#### IV. ENVIRONMENTAL IMPACTS

##### A. Aquatic Habitat

The structure will extend approximately 15 feet into the intertidal zone along the approximately 120 feet of the construction area. The footprint of the revetment is restricted to the fill area in the high intertidal zone. Construction activities end approximately 10 feet short of the mudflat. The environment within the proposed project area is not suitable for significant marine invertebrate resources (See Section III A). Placement of the dike would not result in any significant loss of habitat. Stone at the base of the revetment may provide additional habitat for slipper shells, barnacles, and other marine invertebrates typical of rocky shore habitats.

##### B. Water Quality

The proposed project will have no long term impacts on water quality in the Chelsea River. Construction activities could potentially result in temporarily increased suspended solid concentrations near the project area. Because of the modest scope of this project and construction activities occurring from the land, the impacts to water quality should be slight and highly localized. Proper erosion control procedures to minimize water quality impacts will be incorporated into the plans and specifications designs, if necessary.

##### C. Aquatic Resources

###### 1. Shellfish and Benthic Invertebrates

The proposed project will have no significant impact on the benthic or shellfish populations as construction activities end approximately 15 feet landward of the mudflat. Care will be taken to minimize construction related impacts in the Chelsea River. Since construction activities will occur from the land, impacts into the river will be slight.

## **2. Fish**

The proposed project would have no significant impact on fishery resources of the Chelsea River. The high intertidal area to be filled does not provide significant forage habitat for fish species. The proposed stone revetment could, however, provide new forage habitat by providing substrate for benthic species. The project would therefore not have any significant effect on fish forage habitat.

Fish are usually tolerant of short term exposure to moderate levels of suspended sediments in the water column (Stern and Stickle, 1978). As construction activities occur, adult and juvenile fish will most likely avoid increased turbidity and underwater noise at the construction site.

Winter Flounder are known to spawn in the sandy substrate of the Chelsea River. However, there is most likely a low spawning success due to the disturbances caused by the propwash from tugboats and petroleum carriers.

### **D. Terrestrial Resources**

#### **1. Vegetation**

Construction of the revetment would result in the loss of existing vegetation. It is recommended coordination with the Boston Harborwalk Development Project be incorporated into revegetation plans as to be consistent with future plans for the harborwalk development project.

#### **2. Wildlife**

The project will have no significant impact on the wildlife resources of the Chelsea River at or near the project site. The revegetated slope may provide replacement habitat for mice, shrews, and rats.

### **E. Threatened/Endangered Species**

This project is expected to have no impact on any species considered threatened or endangered by the U.S. Fish and Wildlife Service or the U.S. Environmental Protection Agency. (see correspondence from Gordon Beckett, U.S.F.W.S., 23 May 1989; and Douglas A Thompson, U.S.E.P.A., 13 June 1989). The State of Massachusetts is expected to concur with this finding.

## **F. Prehistoric and Historic Resources**

The proposed project should have no effect upon historic properties. The area has an extensive history of filling activities. However, the area no longer has sufficient integrity to answer any questions about these filling episodes. Placement of the sewer line and sewer manhole as well as a storm drain outlet would have disturbed or destroyed any information available. Therefore, the construction of the proposed emergency streambank protection project should have no effect upon any structure or site of historic, architectural or archaeological significance as defined by the National Historic Preservation Act of 1966, as amended. The Massachusetts Historic Commission in a letter dated 10 August 1989, has concurred with this finding.

## **V. ACTIONS TO MINIMIZE ENVIRONMENTAL IMPACTS**

### **A. Boston Harborwalk Development Project**

It is recommended coordination with the Boston Harborwalk Development Project be initiated to assure the project plans are consistent with any future development of the Boston Harbor Walkway.

## **VI. COORDINATION**

### **A. Correspondence**

1. Project information letters were mailed to the following prior to the preparation of this report.

Douglas A. Thompson, U.S. Environmental Protection Agency  
Gordon E. Beckett, U.S. Fish and Wildlife Service  
Jay Copeland, Massachusetts Natural Heritage Program  
John DeVilliers, Massachusetts Executive Office of  
Environmental Affairs  
Daniel Greenbaum, Massachusetts Department of Environmental  
Protection (formally Department of Environmental  
Quality Engineering)  
Cornelius O'Leary, Massachusetts Department of Environmental  
Protection  
Douglas Beach, National Oceanic and Atmospheric  
Administration  
Steve Bliven, Massachusetts Coastal Zone Management Program  
Valane Talmage, Massachusetts Historic Commission

## 2. Correspondence Received

The following letters were received concerning the project (see Appendix):

Gordon E. Beckett, U.S.F.W.S., 23 May 1989  
Douglas A. Thompson, U.S.E.P.A., 13 June 1989

### B. Site Visit

A site visit was made by Corps of Engineers personnel on 9 February 1989. The following were in attendance:

Kerrin Dame, Impact Analysis Branch  
Robert Russo, Project Formulations Branch  
Paul Schimelfenyg, Geotechnical Engineering Branch

## VII. REFERENCES

Harlow, William, E. Harrar, and F. White. 1937. Textbook of Dendrology. McGraw-hill Book Company. New York (1979 reproduction).

Martin, A.C., H.S. Zim, and A.L. Nelson. 1951. American Wildlife and Plants: A Guide to Wildlife Food Habits. Dover Publications, New York (1961 report).

Massachusetts Historic Commission. n.d. Prehistoric Site Files

Stern, E.M., and W.B. Stickle. 1978. Effects of turbidity and suspended material in aquatic environments (literature review). U.S. COE (WES) TR D-78-21.

Sumner, William H. 1858. History of East Boston; with Biographical Sketches of its Early Proprietors, and an Appendix. J.E. Tilton and Co., Boston.

The East Boston Neighborhood Project. 1976. East Boston. [n.p.], Boston.

U.S. Army Corps of Engineers, New England Division. 1988. Navigation Improvement Study, Feasibility Report, and Environmental Assessment; Boston Harbor, Massachusetts.

## VIII. COMPLIANCE WITH FEDERAL STATUTES AND EXECUTIVE ORDERS

### Federal Statutes

1. Clean Water Act of 1977 (Federal Water Pollution Control Act Amendments of 1972) 33 U.S.C. 1251 et seq.

Compliance: A Section 404(b)(1) Evaluation and Compliance Review have been incorporated into this report. An application shall be filed for State Water Quality Certification pursuant to Section 401 of the Clean Water Act.

2. Marine Protection, Research, and Sanctuaries Act of 1972, as amended, 33 U.S.C. 1401 et seq.

Compliance: Not applicable; project does not involve the transportation nor disposal of dredged material in ocean waters pursuant to Sections 102 and 103 of the Act, respectively

3. National Historic Preservation Act of 1966, as amended, 16 U.S.C. 470 et seq.

Compliance: The project was coordinated with the State Historic Preservation Office to determine whether historic or archaeological resources would be affected by the proposed project.

4. Preservation of Historic and Archaeological Data Act of 1974, as amended, 16 U.S.C. 469 et seq. This amends the Reservoir Salvage Act of 1960 (16 U.S.C. 469).

Compliance: Not applicable: project does not require mitigation of historic or archaeological resources.

5. Endangered Species Act of 1973, as amended, 16 U.S.C. 1531 et seq.

Compliance: Coordination with the U.S. Fish and Wildlife Service (FWS) and/or National Marine Fisheries Service (NMFS) has yielded no formal consultation requirements pursuant to Section 7 of the Endangered Species Act. The results of this coordination has been included in the Public notice.

6. The Estuary Protection Act (16 U.S.C. 1221)

Compliance: Not applicable; This emergency streambank erosion project is authorized under the continuing authority contained in Section 14 of the 1946 Flood Control Act of 1946, as amended.



7. Fish and Wildlife Coordination Act, as amended, 16 U.S.C. 661 et seq.

Compliance: Coordination with the FWS, NMFS, and the appropriate State fish and wildlife agencies through the Public Notice signifies compliance with the Fish and Wildlife Coordination Act. The District Engineer has given full consideration to fish and wildlife conservation in evaluating the project

8. National Environmental Policy Act of 1969, as amended, 42 U.S.C. 4321 et seq.

Compliance: Preparation of this report signifies partial compliance with NEPA. Full compliance shall be noted at the time the Finding of No Significant Impact is issued.

9. Wild and Scenic Rivers Act, as amended, 16 U.S.C. 1271 et seq.

Compliance: Not Applicable, the project is not located in a river listed (Section 2) or proposed for inclusion (Section 3) in the Act.

10. Coastal Zone Management Act of 1972, as amended, 16 U.S.C. 1431 et seq.

Compliance: A CZM consistency determination shall be provided to the State for review and concurrence that the proposed project is consistent to the maximum extent practicable with the approved State CZM program.

11. Clean Air Act, as amended U.S.C. 7401 et seq.

Compliance: Public notice of the availability of this report to the Regional Administrator of the Environmental Protection Agency for review pursuant to Sections 176c and 309 of the Clean Air Act signifies compliance.

12. Federal Water Project Recreation Act, as amended, 16 U.S.C. 4601-12 et seq.

Compliance: Not Applicable

13. Land and Water Conservation Fund Act of 1965, as amended, 16U.S.C. 4601-1.

Compliance: Public notice of the availability of this report to the National Park Service (NPS) and the Office of Statewide Planning relative to the Federal and State comprehensive outdoor recreation plans signifies compliance with this Act.

15. Rivers and Harbors Act of 1899, as amended, 33 U.S.C. 401 et seq.

Compliance: No requirements for Corp's projects or programs authorized by Congress. The proposed project has been Congressionally under the continuing authority granted to the Corps under Section 14 of the Flood Control Act of 1946, as amended.

16. Watershed Protection and Flood Prevention Act, as amended, 16 U.S.C. 1001 et seq.

Compliance: Not applicable.

#### Executive Orders

1. Executive order 11593, Protection and Enhancement of the Cultural Environment, May 13, 1971, (36 FR 8921, May 15, 1971)

Compliance: This order has been incorporated into the National Historic Preservation Act of 1980.

2. Executive Order 11988, Floodplain Management, 24 May 1977 amended by Executive Order 12148, 20 July 1979.

Compliance: Circulation of this report for public review fulfills the requirements of this order.

3. Executive Order 11990, Protection of Wetlands, 24 May 1977.

Compliance: Circulation of this report for public review fulfills the requirements of this order.

4. Executive Order 12372, Intergovernmental Review of Federal Programs, July 14, 1982, (47 FR 3959, July 16, 1982).

Compliance: Not applicable.

5. Executive Order 12114, Environmental Effects Abroad of Major Federal Actions, 4 January 1979.

Compliance: Not applicable.

6. Analysis of Impacts on Prime or Unique Agricultural Lands in implementing NEPA, 11 August 1980.

Compliance: Not applicable.

**FINDING OF NO SIGNIFICANT IMPACT (FONSI)**

## FINDING OF NO SIGNIFICANT IMPACT (FONSI)

The proposed plan involves the construction of approximately 120 feet of stone revetment along the Chelsea River in East Boston, Massachusetts. Presently, shoreline erosion is threatening to rupture a 15 inch sewer main line.

After careful consideration of the information in this Environmental Assessment, it is my conclusion the proposed shoreline erosion control project in East Boston, Massachusetts is in the public interest, and would have no significant impact on the environment.

In my evaluation, this Environmental Assessment has been prepared in accordance with the National Environmental Policy Act of 1969, as amended. My determination of a Finding of No Significant Impact is based on the Environmental Assessment and the following:

1. The proposed plan would have no significant impact on any rare, threatened, or endangered species.

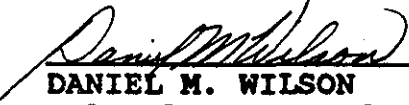
2. The proposed project will have no adverse affects upon any structure or site of historic, architectural, or archeological significance.

3. With the exception of localized, short-term increases in turbidity, the project will have no impact on the water quality of the Chelsea River.

4. Any loss to intertidal habitat will be minimized to the maximum possible extent. Based upon the Environmental Assessment, no significant natural resources will be affected by the proposed project.

Based on my review and evaluation of the environmental effects as presented in the Environmental Assessment, I have determined this local shoreline erosion control project is not a major action affecting the environment, and therefore, is exempt from requirements to prepare an Environmental Impact Statement.

03 NOVEMBER 1989  
Date

  
DANIEL M. WILSON  
Colonel, Corps of Engineers  
Division Engineer

**EVALUATION OF SECTION 404 (B) (1) GUIDELINES**

NEW ENGLAND DIVISION  
U.S. ARMY CORPS OF ENGINEERS, WALTHAM, MA

PROJECT: Chelsea River. Emergency Streambank Erosion Control.

SHORT-FORM  
Evaluation of Section 404(b)(1) Guidelines

1. Review of Compliance (Section 230.10(a)-(d)).      Preliminary      Final

- a. The discharge represents the least environmentally damaging practicable alternative and if in a special aquatic site, the activity associated with the discharge must have direct access or proximity to, or be located in the aquatic ecosystem to fulfill its basic purpose.

☒ ☐  
YES NO

- b. The activity does not appear to:  
1) violate applicable state water quality standards or effluent standards prohibited under Section 307 of the CWA; 2) jeopardize the existence of Federally listed threatened and endangered species or their critical habitat; and 3) violate requirements of any Federally designated marine sanctuary.

☒ ☐  
YES NO

- c. The activity will not cause or contribute to significant degradation of waters of the U.S. including adverse effects on human health, life stages of organisms dependent on the aquatic ecosystem, ecosystem diversity, productivity and stability, and recreational, aesthetic, and economic values

☒ ☐  
YES NO

- d. Appropriate and practicable steps have been taken to minimize potential adverse impacts of the discharge on the aquatic ecosystem.

☐ ☐  
YES NO



2. Technical Evaluation Factors (Subparts C-F).

N/A Not  
Signif- Signif-  
icant icant\*

a. Potential Impacts on Physical and Chemical Characteristics of the Aquatic Ecosystem (Subpart C).

- 1) Substrate.
- 2) Suspended particulates/turbidity.
- 3) Water.
- 4) Current patterns and water circulation.
- 5) Normal water fluctuations.
- 6) Salinity gradients.

	X	
	X	
	X	
	X	
	X	
	X	

b. Potential Impacts on Biological Characteristics of the Aquatic Ecosystem (Subpart D).

- 1) Threatened and endangered species.
- 2) Fish, crustaceans, mollusks and other aquatic organisms in the food web.
- 3) Other wildlife.

X		
	X	
	X	

c. Potential Impacts on Special Aquatic Sites (Subpart E).

- 1) Sanctuaries and refuges.
- 2) Wetlands.
- 3) Mud flats.
- 4) Vegetated shallows.
- 5) Coral reefs.
- 6) Riffle and pool complexes.

X		
X		
	X	
	X	
X		
X		

d. Potential Effects on Human Use Characteristics (Subpart F).

- 1) Municipal and private water supplies.
- 2) Recreational and Commercial fisheries.
- 3) Water-related recreation.
- 4) Aesthetics.
- 5) Parks, national and historic monuments, national seashores, wilderness areas, research sites, and similar preserves.

X		
	X	
	X	
	X	
X		

Remarks: Explanation of identified significant impacts:

3. Evaluation and Testing (Subpart G).

- a. The following information has been considered in evaluating the biological availability of possible contaminants in dredged or fill material. (Check only those appropriate.)

- 1) Physical characteristics.....☒
- 2) Hydrography in relation to known or anticipated sources of contaminants.....☐
- 3) Results from previous testing of the material or similar material in the vicinity of the project.....☒
- 4) Known, significant sources of persistent pesticides from land runoff or percolation.....☐
- 5) Spill records for petroleum products or designated hazardous substances (Section 311 of CWA).....☐
- 6) Public records of significant introduction of contaminants from industries, municipalities, or other sources.....☐
- 7) Known existence of substantial material deposits of substances which could be released in harmful quantities to the aquatic environment by man-induced discharge activities.....☐
- 8) Other sources (specify).....☐

List appropriate references.

SEE ENVIRONMENTAL ASSESSMENT

- b. An evaluation of the appropriate information in 3a above indicates that there is reason to believe the proposed dredge or fill material is not a carrier of contaminants, or that levels of contaminants are substantively similar at extraction and disposal sites and not likely to require constraints. The material meets the testing exclusion criteria.

☒  
YES

☐  
NO

4. Disposal Site Delineation (Section 230.11(f)).

a. The following factors, as appropriate, have been considered in evaluating the disposal site.

- |  |                                     |
|--|-------------------------------------|
| 1) Depth of water at disposal site.....  | <input checked="" type="checkbox"/> |
| 2) Current velocity, direction, and<br>variability at disposal site.....   | <input checked="" type="checkbox"/> |
| 3) Degree of turbulence.....   | <input checked="" type="checkbox"/> |
| 4) Water column stratification.....  | <input checked="" type="checkbox"/> |
| 5) Discharge vessel speed and<br>direction.....  | <input type="checkbox"/>            |
| 6) Rate of discharge.....  | <input type="checkbox"/>            |
| 7) Dredged material characteristics<br>(constituents, amount, and type<br>of material, settling velocities)..... | <input type="checkbox"/>            |
| 8) Number of discharges per unit of<br>time.....   | <input type="checkbox"/>            |
| 9) Other factors affecting rates and<br>patterns of mixing (specify).....  | <input type="checkbox"/>            |

List appropriate references.

SEE ENVIRONMENTAL ASSESSMENT

- b. An evaluation of the appropriate factors in 4a above indicates that the disposal site and/or size of mixing zone are acceptable..... ☒ ☐  
YES NO

5. Actions To Minimize Adverse Effects (Subpart H).

All appropriate and practicable steps have been taken, through application of recommendation of Section 230.70-230.77 to ensure minimal adverse effects of the proposed discharge..... ☒ ☐  
YES NO

List actions taken.

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6. Factual Determination (Section 230.11).

A review of appropriate information as identified in items 2 - 5 above indicates that there is minimal potential for short or long term environmental effects of the proposed discharge as related to:

- a. Physical substrate  
(review sections 2a, 3, 4, and 5 above). YES ☒ NO ☐
- b. Water circulation, fluctuation and salinity  
(review sections 2a, 3, 4, and 5). YES ☒ NO ☐
- c. Suspended particulates/turbidity  
(review sections 2a, 3, 4, and 5). YES ☒ NO ☐
- d. Contaminant availability  
(review sections 2a, 3, and 4). YES ☐ NO ☐
- e. Aquatic ecosystem structure, function  
and organisms (review sections 2b and  
c, 3, and 5) YES ☒ NO ☐
- f. Proposed disposal site  
(review sections 2, 4, and 5). YES ☒ NO ☐
- g. Cumulative effects on the aquatic  
ecosystem. YES ☒ NO ☐
- h. Secondary effects on the aquatic  
ecosystem. YES ☒ NO ☐

7. Findings of Compliance or non-compliance.

- a. The proposed disposal site for discharge of dredged  
or fill material complies with the Section 404(b)(1)  
guidelines..... ☒
- b. The proposed disposal site for discharge of dredged  
or fill material complies with the Section 404(b)(1)  
guidelines with the inclusion of the following  
conditions..... ☐
- c. The proposed disposal site for discharge of dredged or  
fill material does not comply with the Section 404(b)(1)  
guidelines where:
  - 1) There is a less damaging practicable ..... ☐  
alternative

- 2) The proposed discharge will result in significant degradation of the aquatic ecosystem.....☐
- 3) The proposed discharge does not include all practicable and appropriate measures to minimize potential harm to the aquatic ecosystem.....☐
- 4) There is insufficient information available to determine compliance of the proposed discharge.....☐

03 NOVEMBER 1989

DATE

*Daniel M. Wilson*

DANIEL M. WILSON

Colonel, Corps of Engineers  
Division Engineer

## **APPENDIX A: PERTINENT CORRESPONDENCE**





## United States Department of the Interior

FISH AND WILDLIFE SERVICE  
400 RALPH PILL MARKETPLACE  
22 BRIDGE STREET  
CONCORD, NEW HAMPSHIRE 03301-4901

Joseph L. Ignazio  
Chief, Planning Division  
New England Division  
Corps of Engineers  
424 Trapelo Road  
Waltham, Massachusetts 02254

September 21, 1989

Dear Mr. Ignazio:

This is in response to your letter of May 9, 1989, requesting our comments on the proposed Section 14 emergency streambank protection project along the Chelsea River in East Boston, Massachusetts. We provided comments pursuant to the Endangered Species Act in our letter of May 23, 1989. The following comments are provided in accordance with the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 U.S.C et seq.)

The proposed project involves construction of a stone riprap revetment along 140 feet of the south bank of the Chelsea River. The purpose of the project is to stabilize an active erosion area that is threatening a 15-inch sewer main and manhole. The stone revetment would encroach a maximum of 14 feet on the intertidal zone, but would not extend to mean low water. Approximately 1500 square feet of intertidal habitat would be filled. Grade and fill embankments would be maintained at a 2:1 slope. We understand the project has been redesigned so that the small drainage swale referenced in your letter would no longer be filled.

Based on discussions with Impact Analysis Branch staff, we understand the project area is degraded and offers little fish and wildlife habitat value. The intertidal area affected by the project consists of previously deposited fill material, rubble, and debris. The project would not encroach on mudflats found in the mid to low intertidal zone. Work would be accomplished from the bank, thus eliminating the need for equipment to operate in the water. Erosion control measures would be employed to prevent construction-related water quality degradation.

Due to the limited scope of the proposed project, the lack of biological resources within the project impact zone, and the proposed mitigation measures, it appears that the project would not adversely fish and wildlife species of concern to us. We recommend that the contract require implementation of the proposed mitigation measures (e.g. work performed from the shore, erosion and sediment control measures), as well as other best management practices to prevent construction impacts to water quality and benthic habitat adjacent to the work area.



DEPARTMENT OF THE ARMY  
NEW ENGLAND DIVISION, CORPS OF ENGINEERS  
424 TRAPELO ROAD  
WALTHAM, MASSACHUSETTS 02254

REPLY TO  
ATTENTION OF

July 25, 1989

RECEIVED

AUG 1 1989

MASS. HIST. COMM.

Planning Division  
Impact Analysis Branch

Valerie Talmage  
Executive Director  
Massachusetts Historic Commission  
80 Boylston Street  
Boston, Massachusetts 02116

Dear Ms. Talmage:

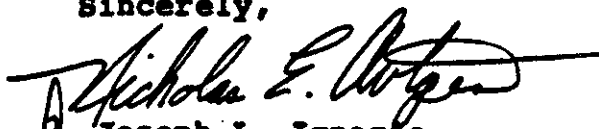
The Army Corps of Engineers is preparing an environmental assessment for a proposed emergency streambank protection project to stabilize a section of riverbank along the Chelsea River in East Boston, Massachusetts (Figure 1). Streambank erosion is threatening a 15 inch sewer main and sewer manhole (photographs enclosed). We would like your comments on this proposed project.

The proposed plan of improvement calls for the placement of stone revetment along approximately 120 linear feet of riverbank. The existing streambank would be graded to a 2 horizontal on 1 vertical slope. In areas where the existing slope is steep, gravel fill would be placed to establish the required 2:1 slope. The stone toe of the revetment wall would extend below mean high water a maximum of 14 feet.

This project should have no effect upon historic properties. The area has an extensive history of filling activities. In a Plan of East Boston from 1858, the proposed project area is adjacent to a wharf which had a gas works situated on it (Figure 2). This area was further filled sometime prior to 1900 when a Corps map of Boston harbor was published showing additional "wharfing out" at this location (Figure 3). A further incidence of filling occurred sometime prior to 1971 (see Figure 1). The proposed project area however, no longer has sufficient integrity to answer any questions about these filling episodes. Placement of the sewer line and sewer manhole as well as a storm drain outlet would have disturbed or destroyed any information available. We feel, therefore, that the construction of the proposed emergency streambank protection project should have no effect upon any structural or site of historic, architectural or archaeological significance as defined by the National Historic Preservation Act of 1966, as amended. We would appreciate your concurrence.

If you have any questions, feel free to contact Ms. Kate Atwood of my staff, at (617)-647-8796.

Sincerely,

  
Joseph L. Ignazio  
Chief, Planning Division

Enclosure

CONCURRENCE: Berna Simon DESHPD

Aug. 10, 1989 for

VALUATION DIVISION  
ECONOMIC DEVELOPMENT  
MASSACHUSETTS  
HISTORICAL COMMISSION



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**

**REGION I**

**J.F. KENNEDY FEDERAL BUILDING, BOSTON, MASSACHUSETTS 02203-2211**

**June 13, 1989**

**Mr. Joseph L. Ignazio  
Chief, Planning Division  
New England Division  
Corps of Engineers  
424 Trapelo Road  
Waltham, Massachusetts 02254**

**Dear Mr. Ignazio:**

**This is in response to your letter of May 9, 1989, requesting our comments on the proposed Emergency Streambank Protection Project, along the Chelsea River in East Boston, Massachusetts.**

**We understand that the proposed erosion control project would allow for the placement of approximately 140 linear feet of riprap along the riverbank. The purpose of the project is to stabilize the streambank and protect a 15" sewer main and sewer manhole.**

**A biologist from our agency made an on-site inspection of the proposed project area on May 24, 1989. It was apparent that severe erosion of the riverbank had begun to threaten the sewer line. There were no significant biological resources in the proposed construction area. Therefore, provided that riprap is placed on a 2:1 slope, we do not anticipate any longterm significant adverse effects to occur in and along the waterway.**

**We appreciate the opportunity to comment on this project. For further coordination on this project contact Melvin P. Holmes at 617 565-4433.**

**Sincerely,**

A handwritten signature in black ink, appearing to read "Douglas A. Thompson", is written over the typed name.

**Douglas A. Thompson, Chief  
Wetlands Protection Section**

**cc: NMFS, Gloucester, MA  
USFWS, Concord, NH**



## United States Department of the Interior

FISH AND WILDLIFE SERVICE  
400 RALPH PILL MARKETPLACE  
22 BRIDGE STREET  
CONCORD, NEW HAMPSHIRE 03301-4901

Joseph L. Ignazio, Chief  
Planning Division  
U.S. Army Corps of Engineers  
424 Trapelo Road  
Waltham, Massachusetts 02254

May 23, 1989

ATTN: Impact Analysis Branch

Dear Mr. Ignazio:

This responds to your letter dated May 9, 1989, for information on the presence of Federally listed and proposed endangered or threatened species in accordance with your proposed Section 14 Emergency Streambank Protection Project in East Boston, Massachusetts.

No Federally listed or proposed threatened and endangered species under our jurisdiction are known to occur in the project area, with the exception of occasional transient individuals. However, you may wish to contact the Massachusetts Natural Heritage Program, 100 Cambridge Street, Boston, Massachusetts 02202, at 617-727-9194, for information on state listed species. No Biological Assessment or further consultation is required with us under Section 7 of the Endangered Species Act. Should project plans change, or additional information on listed or proposed species becomes available, this determination may be reconsidered.

This response relates only to endangered species under our jurisdiction. It does not address other legislation or our responsibilities under the Fish and Wildlife Coordination Act.

A list of Federally designated endangered and threatened species in Massachusetts is inclosed for your information. Thank you for your cooperation and please contact Susi von Oettingen of this office at 603-225-1411 if we can be of further assistance.

Sincerely yours,

Gordon E. Beckett  
Supervisor  
New England Area

Inclosure

**FEDERALLY LISTED ENDANGERED AND THREATENED SPECIES  
IN MASSACHUSETTS**

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>	<u>Distribution</u>
<b>FISHES:</b>			
Sturgeon, shortnose*	<u>Acipenser brevirostrum</u>	E	Connecticut River & Atlantic Coastal Waters
<b>REPTILES:</b>			
Turtle, green*	<u>Chelonia mydas</u>	T	Oceanic straggler in Southern New England
Turtle, hawksbill*	<u>Eretmochelys imbricata</u>	E	Oceanic straggler in Southern New England
Turtle, leatherback*	<u>Dermochelys coriacea</u>	E	Oceanic summer resident
Turtle, loggerhead*	<u>Caretta caretta</u>	T	Oceanic summer resident
Turtle, Atlantic ridley*	<u>Lepidochelys kempi</u>	E	Oceanic summer resident
Turtle, Plymouth red- bellied	<u>Chrysemys rubriventris bangsi</u>	E	Plymouth & Dukes Counties
<b>BIRDS:</b>			
Eagle, bald	<u>Haliaeetus leucocephalus</u>	E	Entire state
Falcon, American peregrine	<u>Falco peregrinus anatum</u>	E	Entire state-reestablish- ment to former breeding range in progress
Falcon, Arctic peregrine	<u>Falco peregrinus tundrius</u>	E	Entire state migratory-no nesting
Plover, Piping	<u>Charadrius melodus</u>	T	Atlantic coast
Roseate Tern	<u>Sterna dougallii dougallii</u>	E	Atlantic Coast
<b>MAMMALS:</b>			
Cougar, eastern	<u>Felis concolor couguar</u>	E	Entire state-may be extinct
Whale, blue*	<u>Balaenoptera musculus</u>	E	Oceanic
Whale, finback*	<u>Balaenoptera physalus</u>	E	Oceanic
Whale, humpback*	<u>Megaptera novaeangliae</u>	E	Oceanic
Whale, right*	<u>Rubalsena</u> spp. (all species)	E	Oceanic
Whale, sei*	<u>Balaenoptera borealis</u>	E	Oceanic
Whale, sperm*	<u>Physeter catodon</u>	E	Oceanic
<b>MOLLUSKS: NONE</b>			
<b>PLANTS:</b>			
Small Whorled Pogonia	<u>Isotria medeoloides</u>	E	Hampshire, Essex Hampden, Worcester Middlesex Counties
Gerardia, Sandplain	<u>Agalinus acuta</u>	E	Barnstable County

\* Except for sea turtle nesting habitat, principal responsibility for these species is vested with the National Marine Fisheries Service

**ENCLOSURES**



Marilyn Swartz Lloyd  
Director

October 16, 1989

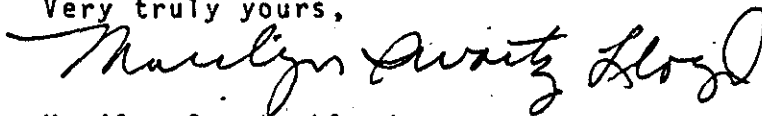
Colonel Daniel Wilson, Division Engineer  
U.S. Army Corps of Engineers  
424 Trapelo Road  
Waltham, MA 02254

Dear Colonel Wilson,

On behalf of the City of Boston, through its lead agency for economic development, the Economic Development & Industrial Corporation of Boston, I would like to support your efforts to protect certain areas along the Chelsea River from the harmful effects of erosion. The City, through its various departments and agencies is in the process of improving the Condor Street area that abuts the Chelsea River. The Army Corps' Streambank Protection project along the Chelsea River will go a long way toward protecting existing and future infrastructure improvements.

Thank you for your consideration of these endangered areas, and we look forward to working with you in the future.

Very truly yours,



Marilyn Swartz Lloyd *STM*  
Director

MSL/LDM/emm  
xc: D. Herberich/EDIC  
L. Mammoli/EDIC  
E. March/EDIC  
S. Horn Moo/EDIC

OPR/usarmy



Raymond L. Flynn, Mayor



## United States Department of the Interior

FISH AND WILDLIFE SERVICE  
400 RALPH PILL MARKETPLACE  
22 BRIDGE STREET  
CONCORD, NEW HAMPSHIRE 03301-4901

Joseph L. Ignazio  
Chief, Planning Division  
New England Division  
Corps of Engineers  
424 Trapelo Road  
Waltham, Massachusetts 02254

September 21, 1989

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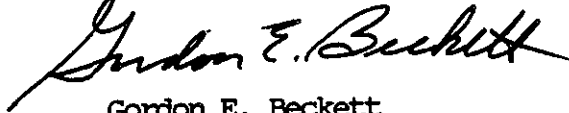
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We appreciate the opportunity to comment on this proposed project. Please contact Mike Tehan of my staff at (603) 225-1411 if we can be of further assistance.

Sincerely yours,

A handwritten signature in cursive script, reading "Gordon E. Beckett". The signature is written in dark ink and is positioned above the printed name.

Gordon E. Beckett  
Supervisor  
New England Area



DEPARTMENT OF THE ARMY  
NEW ENGLAND DIVISION, CORPS OF ENGINEERS  
424 TRAPELO ROAD  
WALTHAM, MASSACHUSETTS 02254

REPLY TO  
ATTENTION OF

July 25, 1989

RECEIVED

AUG 1 1989

MASS. HIST. COMM.

Planning Division  
Impact Analysis Branch

Valerie Talmage  
Executive Director  
Massachusetts Historic Commission  
80 Boylston Street  
Boston, Massachusetts 02116

Dear Ms. Talmage:

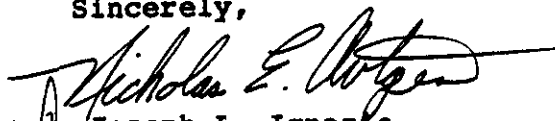
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Sincerely,

  
for Joseph L. Ignazio  
Chief, Planning Division

Enclosure

CONCURRENCE: Berna Simon DSHPO  
Aug. 10, 1989 for  
MASSACHUSETTS  
HISTORICAL COMMISSION